

## CLAIMS

What is claimed is:

- 1 1. A system for fluid isolation in a biological mass having at least one upstream  
2 channel and at least one downstream channel, comprising:  
3 a delivery conduit for administering fluid to the biological mass, the  
4 delivery conduit positioned adjacent to or into one of the upstream channels and  
5 a collection conduit for acquiring the fluid, the collection conduit positioned  
6 adjacent to or one of the downstream channels and having a collection seal for  
7 occluding external fluid flow.
- 1 2. The system of claim 1, further including a driving force in communication with the  
2 delivery conduit for encouraging fluid through the delivery conduit.
- 1 3. The system of claim 1, wherein the delivery conduit is for administering fluid  
2 during at least a substantial period of diastole.
- 1 4. The system of claim 1, wherein the delivery conduit is for administering fluid  
2 during the period of diastole and the period of systole.
- 1 5. The system of claim 1 wherein the delivery conduit further includes a delivery seal  
2 for occluding external fluid flow.

- 1 6. The system of claim 5 wherein the delivery seal is an elastomeric balloon.
- 1 7. The system of claim 6, wherein the delivery seal is contractible to allow external  
2 fluid flow to resume.
- 1 8. The system of claim 7, further including a seal control mechanism for contracting  
2 and expanding the delivery seal.
- 1 9. The system of claim 8, wherein the seal control mechanism is configured to expand  
2 the delivery seal during at least a substantial period of diastole and contract the  
3 delivery seal during at least a substantial period of systole.
- 1 10. The system of claim 1, wherein the biological mass is a human heart.
- 1 11. The system of claim 1, wherein the delivery conduit is positioned into the aorta and  
2 the collection conduit is positioned into the coronary sinus.
- 1 12. The system of claim 1, wherein the fluid includes an agent.
- 1 13. The system of claim 12, wherein the agent is selected from the group consisting of  
2 natural and synthetic drugs, growth factors, gene therapy compositions,  
3 chemotherapeutic chemicals, anti-bacterial chemicals, anti-angiogenic chemicals  
and any combination thereof.
- 1 14. The system of claim 1, further including a second delivery conduit for  
2 administering fluid to the biological mass, wherein the second delivery conduit is  
3 positioned in another of the upstream channels.

1 15. The system of claim 14, wherein one delivery catheter is positioned in the left main  
2 coronary artery and the second delivery conduit is positioned in the right coronary  
3 artery.

1 16. A system for fluid isolation in a biological mass having at least one upstream  
2 channel and at least one downstream channel, comprising:

3 a first delivery conduit for administering fluid to the biological mass and  
4 positioned adjacent to or into one of the upstream channels and a second delivery  
5 conduit for administering fluid to the biological mass and positioned adjacent to  
6 or into another of the upstream channels and

7 a collection conduit for acquiring the fluid, the collection conduit positioned  
8 adjacent to or into one of the downstream channel and having a collection seal for  
9 occluding external fluid flow.

1 17. The system of claim 16, wherein one delivery catheter is positioned in the left main  
2 coronary artery and the second delivery conduit is positioned in the right coronary artery.

1 18. The system of claim 16 wherein the each of the delivery conduits further include a  
2 delivery seal for occluding external fluid flow.

- 1 19. The system of claim 18 wherein the delivery seals are an elastomeric balloon.
- 1 20. The system of claim 19, wherein the delivery seals are contractible to allow external  
2 fluid flow to resume.
- 1 21. The system of claim 20, further including a seal control mechanism for contracting  
2 and expanding the delivery seals.
- 1 22. The system of claim 21, wherein the seal control mechanism is configured to  
2 expand the delivery seals during at least a substantial period of diastole and contract  
3 the delivery seals during at least a substantial period of systole.
- 1 23. A method of delivering and isolating fluid in a biological mass having at least one  
2 upstream channel and at least one downstream channel, comprising the steps of:
- 3           inserting a delivery conduit adjacent to or into one of the upstream channels;
- 4           inserting a collection conduit adjacent to or into one of the downstream  
5 channels, the collection conduit having an external collection seal;
- 6           activating the collection seal to occlude fluid flow outside of the collection  
7 conduit;
- 8           administering fluid through the delivery conduit to the upstream channel;  
9 and
- 10          allowing the fluid to flow into the downstream channel and into the  
11 collection conduit.
- 1 24. The method of claim 23, wherein the biological mass is the heart.

- 1 25. The method of claim 24, wherein the delivery conduit is inserted into the aorta and  
2 the collection conduit is inserted into the coronary sinus.
- 1 26. The method of claim 23, wherein the delivery conduit has a delivery seal and the  
2 steps further include of expanding the delivery seal during at least a substantial  
3 period of diastole and contracting the delivery seal during at least a substantial  
4 period of systole.
- 1 27. The method of claim 23, wherein the administering of fluid is during at least a  
2 substantial period of diastole.
- 1 28. The method of claim 23, wherein the fluid includes an agent.
- 1 29. The method of claim 28, wherein the agent is selected from the group consisting of  
2 natural and synthetic drugs, growth factors, gene therapy compositions,  
3 -chemotherapeutic chemicals, anti-bacterial chemicals, and any combination thereof.
- 1 30. The method of claim 23, further including the step of applying a drainage force to  
2 the collection conduit for drawing fluid into the collection conduit
- 1 31. The method of claim 23, further including the step of inserting a second delivery  
2 conduit adjacent to or into a second upstream channel of the biological mass and  
3 administering fluid through the second delivery conduit to the second upstream  
4 channel.
- 1 32. The method of claim 31, wherein the administering of fluid to the first delivery  
2 conduit and second delivery conduit is during the period of diastole and the period  
3 of systole.

1 33. A method of delivering and isolating fluid in a biological mass, comprising the  
2 steps of:  
3 inserting a first delivery conduit adjacent to or into a first upstream channel  
4 of the biological mass and a second delivery conduit adjacent to or into a second  
5 upstream channel of the biological mass;  
6 inserting a collection conduit adjacent to or into a downstream channel of  
7 the biological mass, the collection conduit having an external collection seal;  
8 activating the external collection seal to occlude fluid flow outside of the  
9 collection conduit;  
10 administering fluid through the first delivery conduit to the first upstream  
11 channel and through the second delivery conduit to the second upstream channel;  
12 and  
13 allowing the fluid to flow into the downstream channel and into the  
14 collection conduit.

1 34. The method of claim 33, wherein the biological mass is the heart.

1 35. The method of claim 34, wherein the first delivery conduit is inserted in the left  
2 main coronary artery, the second delivery conduit is positioned in the right coronary  
3 artery and the collection conduit is inserted in the coronary sinus.

1 36. The method of claim 33, further including the step of applying a drainage force to  
2 the collection conduit for drawing fluid into the collection conduit.

1 37. The method of claim 33, wherein the each of the delivery conduits have a delivery  
2 seal and the steps further include of expanding the delivery seals during at least a  
3 substantial period of diastole and contracting the delivery seals during at least a  
4 substantial period of systole.

1 38. A system for use in a method according to claim 23, comprising:  
2 a fluid for flowing through an upstream channel and downstream channel of  
3 a biological mass;  
4 a delivery conduit for administering the fluid to the upstream channel; and  
5 a collection conduit for acquiring the fluid from the downstream channel,  
6 the collection conduit having a collection seal for occluding external fluid flow.

1 39. The system of claim 38, wherein the fluid includes an agent.

1 40. The system of claim 39, wherein the agent is selected from the group consisting of  
2 natural and synthetic drugs, growth factors, gene therapy compositions,  
3 chemotherapeutic chemicals, anti-bacterial chemicals, and any combination thereof.

1 41. The system of claim 38, further including a drainage force mechanism in  
2 communication with the collection conduit for drawing fluid into the collection  
3 conduit.

- 1 42. A system for use in a method according to claim 33, comprising:
- 2 a fluid for flowing through at least two upstream channels and at least one
- 3 downstream channel of a biological mass;
- 4 a first delivery conduit for administering the fluid to a first upstream
- 5 channel;
- 6 a second delivery conduit for administering the fluid to a second upstream
- 7 channel; and
- 8 a collection conduit for acquiring the fluid from the downstream channel,
- 9 the collection conduit having a collection seal for occluding external fluid flow.
- 1 43. The system of claim 42, wherein the fluid includes an agent.
- 1 44. The system of claim 43, wherein the agent is selected from the group consisting of
- 2 natural and synthetic drugs, growth factors, gene therapy compositions,
- 3 chemotherapeutic chemicals, anti-bacterial chemicals, and any combination thereof.
- 1 45. The system of claim 42, wherein the delivery catheter includes a delivery seal for
- 2 occluding external fluid flow.
- 1 46. The system of claim 45, further including a seal control mechanism for contracting
- 2 and expanding the delivery seal.
- 1 47. A system for use in a method according to claim 23, comprising:
- 2 an agent for combination with a fluid and for travel through an upstream
- 3 channel and downstream channel of a biological mass;



- 4 a delivery conduit for administering the fluid to the upstream channel; and
- 5 a collection conduit for acquiring the fluid from the downstream channel,
- 6 the collection conduit having a collection seal for occluding external fluid flow.